

COMPLETE LISTING OF CLAIMS, INCORPORATING AMENDMENTS
IN RESPONSE TO OFFICE ACTION DATED 03/22/2007
FOR SERIAL NO. 10/828,534.

We claim the following:

1. (Currently Amended) ~~A carbon nanotube-polymer composite~~ An actuator comprising:
at least one electrolyte;
at least two electric conducting electrodes separated by said at least one electrolyte;
[[and]]
at least one electrode providing an electromechanical response upon application of
an electronic voltage between said at least two electric conducting electrodes; and
at least one electrode comprising a carbon nanotube-polymer composite doped with
a metal.
2. (Canceled)
3. (Currently Amended) ~~The carbon-nanotube-polymer-composite~~ actuator of claim [[2]]
1, wherein 0.1-18 weight percent of the carbon nanotube-polymer composite is
between 0.1-18 weight-percent single wall carbon nanotubes.
4. (Currently Amended) ~~The carbon-nanotube-polymer-composite~~ actuator of claim [[2]]
1, wherein the carbon-nanotube composite is prepared by polymer processing
material techniques.
5. (Currently Amended) An actuator comprising:
at least one electrolyte;
at least two electric conducting electrodes separated by said at least one electrolyte;
and

at least one electrode providing an electromechanical response upon application of an electronic voltage between said at least two electric conducting electrodes;

The carbon nanotube-polymer composite actuator of claim 2, wherein the carbon-nanotube-composite actuator is prepared by the following method

preparing a carbon nanotube-polymer solution;

casting the carbon nanotubes-polymer solution, forming a carbon nanotube-polymer composite;

drying the carbon nanotube-polymer composite;

doping the carbon nanotube-polymer composite with a metal.

6. (Currently Amended) The ~~carbon nanotube-polymer composite~~ actuator of claim 5, wherein the nano-tube polymer solution is prepared by mixing: a polymer, carbon nanotubes and a liquid, wherein the polymer is soluble or dispersible in the liquid.
7. (Currently Amended) The ~~carbon nanotube-polymer composite~~ actuator of claim 6, wherein the carbon nano-tubes are single wall carbon nanotubes.
8. (Currently Amended) The ~~carbon nanotube-polymer composite~~ actuator of claim 6, wherein the polymer is selected from the group consisting of: ionomers, smart-gels, polyelectrolytes, ionic polymers, ionically doped polymers, and combinations thereof.
9. (Currently Amended) The ~~carbon nanotube-polymer composite~~ actuator of claim 6, wherein the polymer is a perfluorinated ionomeric polymer.
10. (Currently Amended) The ~~carbon nanotube-polymer composite~~ actuator of claim 6, wherein the liquid is an alcohol.

11. (Currently Amended) The ~~carbon-nanotube-polymer-composite~~ actuator produced by the process of claim 5, the process further comprising: high shear stirring the carbon nanotube-polymer solution before casting.
12. (Currently Amended) The ~~carbon-nanotube-polymer-composite~~ actuator produced by the process of claim 5, the process further comprising: homogenizing the carbon nanotube-polymer solution before casting.
13. (Currently Amended) The ~~carbon-nanotube-polymer-composite~~ actuator produced by the process of claim 5, the process further comprising: centrifuging the carbon nanotube polymer solution before casting.
14. (Currently Amended) The ~~carbon-nanotube-polymer-composite~~ actuator of claim 5, wherein the metal is selected from the group consisting of: platinum, gold, copper and combinations thereof.
15. (Currently Amended) The ~~carbon-nanotube-polymer-composite~~ actuator of claim 1, wherein the electrolyte is selected from the group consisting of: monovalent metal ions, polyvalent metal ions and combinations thereof.
16. (Currently Amended) The ~~carbon-nanotube-polymer-composite~~ actuator of claim 5, where the carbon nanotube is a multi wall nanotube, a nanohorn or other fibrous carbon nanostructured material.
17. (Currently Amended) The ~~carbon-nanotube-polymer-composite~~ actuator of claim 5, wherein the composite is produced by a technique selected from the group consisting of: melt polymerization, extrusion, and solution casting.

18. (Currently Amended) The ~~carbon-nanotube-polymer composite~~ actuator of claim 5, wherein the actuator is capable of operating in aqueous, non-aqueous, gel, or solution free environments.
19. (Currently Amended) The ~~carbon-nanotube-polymer composite~~ actuator of claim 5, wherein the ~~electro-chemical~~ electromechanical response includes an osmotic mechanism.
20. (Currently Amended) The ~~carbon-nanotube-polymer composite~~ actuator of claim 5, further comprising a surfactant applied to the actuator.
21. (Currently Amended) The ~~carbon-nanotube-polymer composite~~ actuator of claim 5, wherein at least one electrode is ceramic.
22. (Currently Amended) The ~~carbon-nanotube-polymer composite~~ actuator of claim 1 where at least one of the electrodes is comprised of nanostructured materials.
23. (New) The actuator of claim 6, wherein the polymer is a smart gel.